

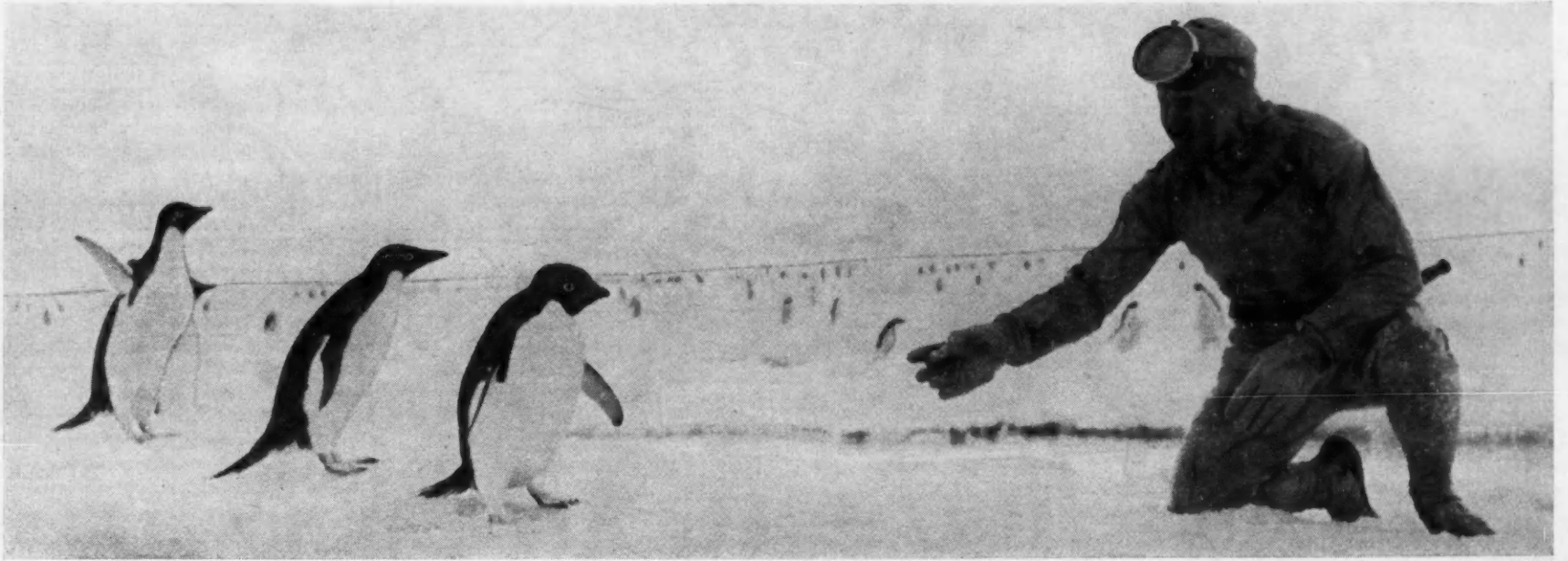
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NAVY FROGMAN, who has just climbed out of frigid ocean water, surprises playful Adélie penguins, sometimes called "clowns of the Antarctic"

Science Is Seeking to Master Antarctic

Icy Land Yielding Much Knowledge to Hardy Explorers This Year

We are devoting a major portion of this paper to a study of Antarctica, and will resume our regular features next week. We feel this subject is of vital importance because many nations are cooperating at great cost in an 18-month search for more knowledge of the southern polar regions. The scientific investigation now being conducted can be of real value to the world.

The material used in the following article was supplied by the United States Navy, which is in charge of U.S. explorations in Antarctica. However, the Army, Air Force, and Marines are cooperating in making possible the gigantic and difficult operation in the cold, faraway area.

WILL man soon blaze the first overland trail clear across Antarctica? We shall know the answer to this question within a matter of days, or several weeks at most.

An effort to make the dangerous journey from one side of the cold southern continent to the other got under way some time ago. Those making the try, British scientist Vivian Fuchs and 11 other men, reached the South Pole January 19. They had traveled by tractor for 57 days from the Weddell Sea (see map on page 3), and were then roughly half the way to their goal.

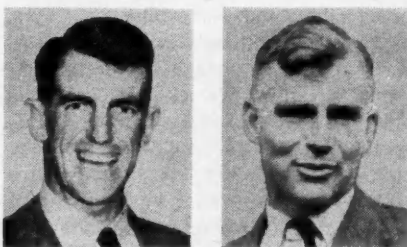
Early in February, the men were about 500 miles from the Pole on their way to Ross Sea in blizzards. They were in danger of losing their lives if an accident occurred. If they succeeded, they were expecting to reach the sea about March 1. Victory over the hardships before them would mean that Fuchs and his party had crossed Antarctica overland—something that no men in past history ever accomplished.

A second team, traveling from Ross Sea, had reached the South Pole on

January 3—some days ahead of Fuchs. The second team was headed by Sir Edmund Hillary of New Zealand, who is well known for his ascent of Asia's Mt. Everest several years ago.

Fuchs, Hillary, and their aides were the first men to reach the South Pole by overland travel in 46 years. Roald Amundsen and 4 companions, in December 1911, were the first human beings to set foot at the Pole.

The Fuchs-Hillary expeditions form a part of a series of exciting explorations and scientific studies now in



ANTARCTIC explorers, Sir Edmund Hillary of New Zealand (left), and Vivian Fuchs of Britain. Their daring exploits are making history.

progress in Antarctica. The studies will add much to man's knowledge of the southern continent. Let us take a look at the cold and snowy land.

WHAT IS IT?

The Antarctic is the southern end of our world, just as the Arctic is the northern end. The Antarctic, however, is mainly a continent surrounded by oceans. The Arctic is just the opposite. It is mainly an ocean surrounded by continents.

Antarctica contains over 5,500,000 square miles. This makes it about half the size of Africa. It is also the highest of all continents, averaging some 6,000 feet above sea level. The next highest, Asia, averages less than 3,000 feet despite its towering mountains.

The height of Antarctica is caused by the ice and snow that have piled up there over hundreds of thousands, perhaps millions, of years. The center of the continent is covered by a high plateau or icecap. In places, this icecap is more than 2 miles thick. Scientists believe that over 85% of the world's ice is in Antarctica. (Most of the rest is in Greenland and various other Arctic regions.)

The great weight of this ice causes it to push out toward the edges of the continent in the form of glaciers. When it reaches the ocean, the ice moves out across the sea in the form of ice shelves. These are attached to the land at one end, and float on the water at the other. They look like white cliffs when seen from the sea. They rise out of the water roughly 80 feet.

Only about one-third of the shelves may be seen above the surface, so there is far more ice in them than it appears. On top they are flat, and their areas vary. The largest of all, the great Ross Ice Shelf, is about the size of France.

From time to time, pieces of a shelf break off and float away as flat-topped icebergs. These are frequently so large that early explorers called them ice islands. On November 12, 1956, the United States icebreaker *Glacier* saw an iceberg that measured 200 miles long and 60 miles wide.

The Antarctic is the coldest area in the world, even colder than the Arctic. The lowest temperature recorded—102.1 degrees below zero—was reported by U. S. scientists at the South Pole during 1957.

During the Antarctic summer, from December through March, temperatures rarely go above freezing even along the coast. Inland on the icecap, they almost never go that high.

Winds blow almost constantly, and their speeds have been recorded at above 200 miles per hour. On the

continent, these winds blow the snow and create great blizzards. As the storms race out to sea, they whip up gigantic waves. As a result, the seas around Antarctica are the roughest in the world.

In appearance, Antarctica is like a vast white desert. Here and there, mountain tops poke through the ice, and spots have been found along the coast which are bare during the summer. The mountains, which are found all around the edge of the continent, rise as high as 15,000 feet. Some may be even higher. One of them, Mount Erebus, is an active volcano.

In all, only about 1% of the land can be seen. Snow and ice cover the other 99%.

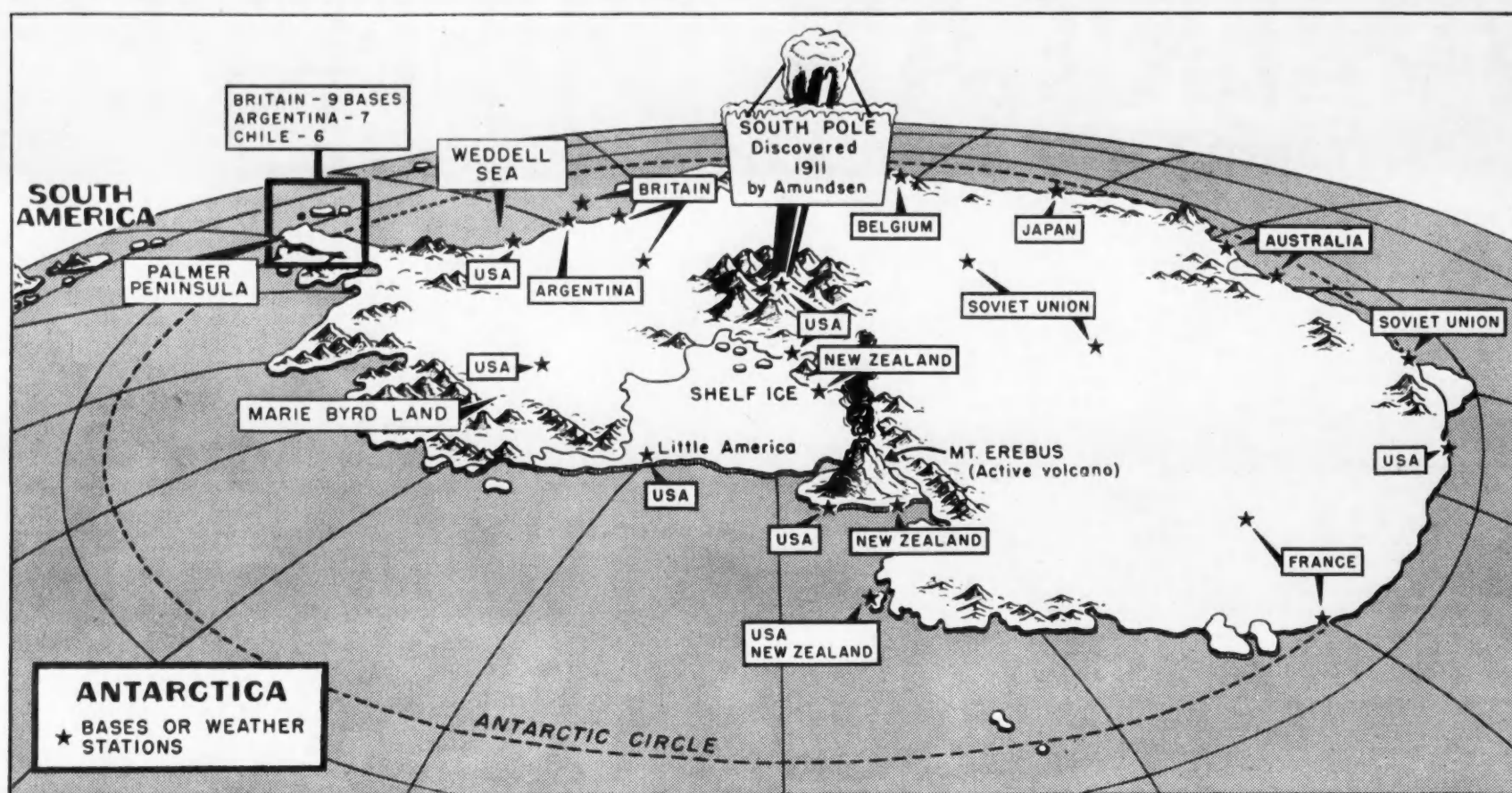
Recently, some U. S. scientists at a camp 5,000 feet above sea level tried to find out what was beneath them. Their instruments showed that they were standing on 10,000 feet of ice. What lay below? Many tests will be needed before scientists really know.

The best investigation that has been made so far indicates that a land much like Norway lies under the ice. There are steep mountains and deep valleys. Arms of the sea, like the Norwegian fiords, run far inland. This is not surprising, because scientists feel that Norway itself was covered by an icecap as late as 10,000 years ago.

You may wonder why men go to the Antarctic. Why do they brave a difficult voyage across rough seas? Why do they face the cold, the blizzards, and long months of darkness when the sun never rises?

In earlier days, some men went to look for seals. Others later went in search of whales. But even these men, who sought primarily to make a living, were lured on by the mysterious, white, silent world of Antarctica. It seemed important to see and to learn. Scientific study is the principal reason for

(Continued on page 2)



STARS INDICATE weather stations and bases established by various countries in Antarctica. Tall "signpost" labeled as South Pole does not really exist, but is

mapmaker's way of indicating the southernmost point on earth—a silent, lifeless spot at heart of the snow-covered continent whose secrets are being revealed.

Antarctic Study

(Continued from page 1)

journeys to this part of the globe.

Since July 1, 1957, men from a number of nations—including our own—have been seeking answers to many questions at over 60 scientific stations in and around the Antarctic area. Our nation is operating 7 of these stations.

The Antarctic study is part of a world-wide effort known as the International Geophysical Year (IGY). Actually, IGY isn't a year. It is an 18-month period, which ends December 31, 1958. In all, more than 60 nations are cooperating in collecting information about the earth at bases all around the globe. The Antarctic stations form a major branch of the IGY study.

SEEKING KNOWLEDGE

What do scientists want to learn from the Antarctic? More knowledge about the weather is one goal.

Scientists believe that conditions in Antarctica influence weather in all parts of the world. From their observations down there, they may be able to predict atmospheric changes more accurately.

Another subject for study is the great icecap. Is it growing larger or smaller? If it is shrinking, as some people think, more ice is being turned into water as time goes on. If this process continues over a long period, the oceans will rise. Many cities, such as New York and Seattle, will be covered by water in the distant future.

On the other hand, if the icecap is growing, the opposite effect will result, and the level of the seas will go down. No one really knows the answer to this question at the present time.

Scientists are also interested in what happens to the water from Antarctica when the ice melts. In winter, the oceans around the continent freeze. This belt of sea ice is called the pack. During the summer, the pack tends to break up and flow off northward, melting as it goes. All this cold water is

believed to have an effect on ocean currents throughout the world.

Still another goal of explorers and scientists who have gone to Antarctica is to search for minerals. So far, coal, gold, silver, copper and about 170 other minerals have been found, even though less than 1% of the continent has been studied for this purpose.

Anyone who has used a compass is aware that one end points north and the other points south. This is because the compass is a magnet and so is the earth. Like any 2 magnets, they tend to line themselves up alongside each other.

One end of the earth's magnet is in the Arctic and is called the north magnetic pole. The other is the south magnetic pole, which is located in the Antarctic. If you had your compass over either of these poles, the needle would try to stand on end. Scientists know, however, that the magnetic poles do not stay still. They move around.

Since we use compasses to steer ships and aircraft, it is important to study how and why magnetic changes occur. Experts believe that some changes result slowly from what goes on below the surface of the earth. They hope by making many measurements to learn more about this possibility.

Other alterations of the magnetic field are rather rapid. These appear to result from rays that bombard the earth. The rays are particles of energy, much like those released when an atom is smashed. Some of these rays come from the sun. Others start elsewhere in outer space, perhaps from the stars. Few of these particles ever reach the earth, because they are trapped in a band of light air and gases between 50 and 200 miles above us.

This band, where the space rays are trapped, plays a vital part in making your radio work. When radio waves strike the band, they bounce back to earth again. This action makes possible long-range radio. Without it, the radio waves would go into space.

From time to time, the number of rays bombarding our atmosphere in-

creases very rapidly and causes magnetic storms. These have been traced to explosions on the sun which look, when seen through telescopes, like spots. The storms caused by sunspots produce one of the most beautiful displays in all nature. Curtains of light in many changing colors dance across the sky. This is the aurora.

When we see the aurora in the United States, we refer to the display as the Northern Lights. In the Southern Hemisphere, men refer to the display there as Southern Lights.

The rays that bombard the earth are attracted toward the magnetic poles. The aurora then occurs at the northern and southern ends of the earth. For that reason, the Antarctic is a good place for study of the rays and their effects upon our atmosphere.

All these subjects are important. They will help to explain better the earth on which we live. Men in the Antarctic also study plants and animals they find there. Many facts are being learned about how to live where it is very cold—and how motors and other things work under difficult conditions. The continent is a huge testing laboratory, as well as a place to learn more about natural forces.

ANIMALS AND PLANTS

This frozen continent has no polar bears, no reindeer—in fact, no native 4-footed animals. No men live there, except those whose homes are on other continents. There are no trees, no flowering plants—only, for the most part, a few mosses and lichens which cling to exposed rocks. In the Palmer Peninsula, which juts out to within 600 miles of the tip of South America, there are a few coarse grasses. That is all.

This situation is in contrast to the Arctic area, which has animals and flowers. More than a million people live along the coasts of North America, Europe, and Asia, or on islands north of the Arctic Circle. In the Arctic, insects may be found in great swarms. In the Antarctic, just a few creatures

manage to live among the mosses and lichens. A mosquito without wings is typical.

In the Antarctic, land can't support living creatures, but the waters around the continent can. Nowhere else in the world, on land or sea, is there so much food per acre as in the seas around Antarctica. As a result, life in these waters is abundant.

There are plants and animals so small that they must be seen under a microscope, but so thick that they stain the ice a yellowish brown. There is a great blue whale, believed to be the largest animal that has ever existed. A full-grown adult whale may be 90 feet long and weigh 150 tons. Not even the largest dinosaur reached this size.

Other whales of only slightly smaller size also exist in large numbers. These great beasts are hunted every year by men from a dozen nations. The hunters are most interested in oil, which is made from whale fat. This oil has many uses, both as a food product and a lubricating oil. Other parts of the whale—including meat for food—are also used. Practically nothing is wasted.

Modern whaling is a big business. Each expedition is built around a factory ship on which the fat is made into oil and the other parts of the whale are packaged. These ships are what the name implies—completely equipped factories filled from top to bottom with special machinery.

Each factory ship is accompanied by a number of small vessels known as whale-catchers. A whale-catcher has a harpoon-gun to shoot the whale, and strong winches to pull him in. When a catcher has caught several whales, it tows them to the factory ship for processing.

A smaller cousin of the whale is the porpoise. In the Antarctic, one type of porpoise is so large that men have mistakenly named it the killer whale.

True killer whales, about 30 feet long, are among the most savage of all beasts. They roam in packs and will attack the great blue whale.

Leopard seals are also fierce. Like

whales and porpoises, seals live mainly on the smaller fish and organisms of the sea. They have not, however, entirely lost their ability to climb out of the water and move about on land.

In Antarctic history, seals are important. The first men to see and set foot upon the continent—so far as we know—went there looking for fur seals in the 1800's. The hunters found them by the thousands on islands around Antarctica. So greedy were the men, they almost completely killed off the seals within less than 10 years. In order to prevent the same thing from happening to whales, the nations engaged in whaling now agree to limits on the number that may be caught each year.

Many seals still live in Antarctica, but only a few have skins that are good for fur. In time, under regulations to protect them from being hunted excessively, it may be possible again to obtain the fur seals profitably. Except for leopard seals, most of those now in Antarctica are harmless. They may often be seen sunning themselves on the ice. They sometimes eat out of the hands of explorers there.

So far, no one has found it necessary to adopt special protective measures for the millions of birds that swarm along the shores of the continent or nest on nearby islands. They eat fish and other sea-life.

There are many varieties of these birds, most of them not unlike the gulls that live along our coasts. Some actually migrate from the Arctic to the Antarctic every year. The most southerly of all birds is the *skua gull* which has been seen on the icecap within just a very few miles of the South Pole itself.

One of the world's most unusual birds, the *penguin*, long ago lost the

ability to fly. His wings have turned into flippers, which he uses to swim through the water at great speed. On shore, the penguin usually stands upright and waddles about, looking like a comic-book version of a man. When in a hurry, penguins will sometimes flop on their stomachs and use their webbed feet and flippers to help them slide across the ice.

About a dozen varieties of penguins exist. The best known are the emperor and Adélie penguins. Emperor penguins are large, dignified birds. They are between 3 and 4 feet tall and weigh, when fully grown, between 60 and 90 pounds. A blow from their flippers may be strong enough to break a man's arm.

The Adélie penguins are the clowns of the Antarctic. They are about half the size of their cousins, the emperors, and are much livelier. They are playful and curious and have no fear of men. As a result, they frequently get in the way of workers building bases or operating tractors around an Antarctic station.

EARLY VOYAGES

The Antarctic as we know it was discovered around 1820, but no one passed the winter ashore until 1899. Between those 2 dates, many men saw the continent from ships at sea, and a few stepped ashore, but none stayed any length of time.

Between 1772 and 1775, Captain James Cook of the British Navy, with 2 ships, sailed completely around the continent without ever seeing it. He met plenty of pack ice, and—because of the birds he saw—came to believe there was land somewhere farther to the south.

In the course of his voyage, Captain



ELEPHANT SEAL enjoys a bit of food from member of Australian expedition

Cook discovered the island of South Georgia. It lies in the South Atlantic Ocean, and is one of the gateways to Antarctica. On the island's beaches, Cook spied fur seals.

This news was of keen interest to hundreds of adventurous American and British seal hunters. The demand for seal skins was very great in those days. As the number of seals on known beaches decreased, the hunters sailed farther southward looking for new beaches. Cook's report was like a magnet, drawing them onward.

It seems probable that these sealers were the first people to see Antarctica. They frequently tried to conceal their discoveries, not wanting others to know where the seals were. Also, they did not keep very good records. We are fairly certain, though, that on November 17, 1820, Captain Nathaniel B. Palmer, of Stonington, Connecticut, sighted the continent near the tip of the Palmer Peninsula.

On January 30, 1820, several months before Captain Palmer, a British ship

had sailed through the same area, but the weather was bad. When the air cleared somewhat, those on board saw land to the south. This may have been the mainland, or it may have been any one of several islands off the coast.

Also during January 1820, 2 Russian ships were cruising off the opposite side of Antarctica. Their commander was a German, who had become an officer in the Russian Navy. Several times during 1820, he saw what might have been land, but also might have been giant icebergs. Finally, on January 28, 1821, he saw a rugged mountainous coast which he named Alexander I Land after the Emperor of Russia. Later explorers have shown that Alexander I Land is really an island.

On February 7, 1821, Captain John Davis of Connecticut sent a boat ashore in Hughes Bay. He wrote in his logbook: "I think this southern land to be a continent." He was right, but it was 19 years later before enough points along the coast had been seen to support the Connecticut captain's conclusion.

The real evidence came from an expedition led by Lieutenant Charles Wilkes of the United States Navy. His was the first expedition for which our government supplied its own ships to explore the Antarctic.

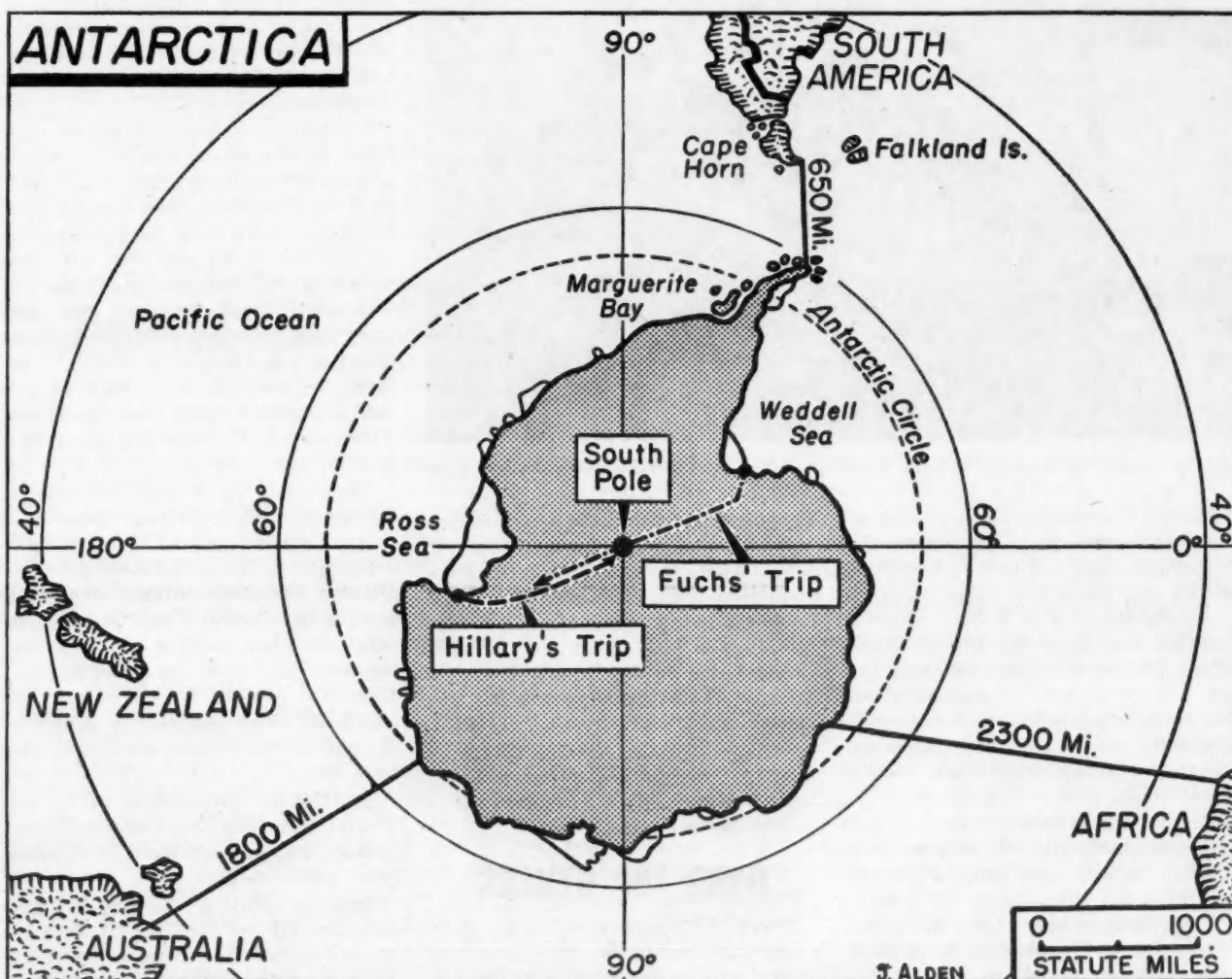
Sailing from the United States late in 1838, Wilkes first reached the Antarctic south of Cape Horn early in 1839. After skirting the ice pack to the westward, he went to Australia during the Antarctic winter. He returned to the frozen continent in December 1840, and saw land at numerous points over a distance of 1,500 miles.

The Wilkes explorations convinced people that there was a southern continent, and they called it Antarctica. Today a big section of this region appears on our maps as Wilkes Land in his honor.

Imagine the surprise of the men on one of Wilkes' ships in January 1840. As they carefully navigated a foggy sea filled with icebergs, 2 ships flying the flag of France suddenly loomed up and then disappeared into the fog. They were ships of an exploring expedition that had left France in 1837. Their commander was Captain Dumont d'Urville of the French Navy. He, too, discovered parts of Antarctica, and one of them is now called the Adélie Coast, after the first name of his wife.

Before he left the southern seas, Lieutenant Wilkes took time to write a letter telling about his discoveries to a British naval officer, James Clark Ross—who went exploring in 1839—

(Continued on page 4)



THIS MAP and one on preceding page show Antarctica from different views; thus, on one, South America is to the left, and on the other, it is at the top. Moreover, Australia and Africa appear to be below the South Pole, which, of course, is impossible. The way to understand these maps is to get a globe and look at Antarctica from varying positions. You will find that the page 2 map shows the continent as it would appear if you were over New Zealand and could see the entire polar region from that angle. The page 3 map, on the other hand, shows Antarctica in relation to the other continents as it appears when you look straight down at the South Pole.

In the Antarctic

(Continued from page 3)

1843. Because he knew about Wilkes and d'Urville, Ross sailed farther east than they had done. He had ships that had been especially strengthened, and he plunged boldly into the ice pack. After 4 days, his 2 ships came out of the pack into an open sea that now bears his name.

No ice was visible, and Ross sailed south for 500 miles. As he and his crew went along, they began to see mountains to the west. Gradually, there appeared before their eyes one of the grandest views ever seen by man, the mountain ranges of Victoria Land. Ross was finally stopped by the great white cliffs of the ice shelf—but not until he had sighted Mount Erebus, an active volcano more than 13,000 feet high.

During the years 1898-1899, a Belgian expedition under Lieutenant Adrien de Gerlache found its ship frozen fast. The vessel drifted with the ice until summer.

Just about the time the ice loos-

the pack for a year before they were rescued.

The Swedes made shore, but their relief ship was crushed—leaving the passengers to make out as best they could. These men proved it was possible to live from what they could find in the Antarctic. They remained in the area until November 1903, when an Argentine naval vessel came to their rescue.

The British National Antarctic Expedition was commanded by Captain Robert Scott of the British Navy. From his base at Hut Point on McMurdo Sound at the western end of the Ross Sea, many sledding parties set out to explore and observe. One went south over the Ross Ice Shelf for 380 miles. Two others climbed the Victoria Land mountains to reach the polar plateau. By the time Captain Scott left the area in 1904, his scientists had collected enough information to put Antarctic studies on a sound basis.

From 1901, expeditions were in the area nearly every year. Increasing numbers of whalers were also active in the area. Many of them investigated places not previously seen. Some

rechecking their position. Amundsen's journey showed his great skill as an organizer and proved the worth of Eskimo dogs for hauling sleds.

About a month after Amundsen, Captain Scott and 4 other Englishmen stood on the same spot. They had started from McMurdo Sound, a considerable distance farther from the Pole than the Bay of Whales. For transport, they hauled their sleds themselves.

On the return from the Pole, bad luck followed in their footsteps. Growing weaker each day from their great exertion and lack of proper food, they encountered storms and blizzards. One man died on the trail. Another walked from his tent into a raging storm to die alone. Captain Scott and his 2 remaining companions struggled a little farther until they too were trapped by a blizzard. They died in their tent, a scant 10 miles from their next food depot.

The following spring, a search party found the tent and collected Captain Scott's papers and diaries. Among other items, the party found 30 pounds of rocks, all selected for their scientific interest. Despite cold, hunger, and

Rear Admiral Richard E. Byrd. Before leading his first expedition to the Antarctic, Byrd had already had a distinguished career in aviation. He had been the first man to fly over the North Pole and had flown the Atlantic. He also had been prominent in developing the instruments which made such flights possible. All in all, the name of Richard E. Byrd has a prominent place in the history of aviation and polar explorations.

The earliest Byrd Antarctic Expedition (1928-1930) is best remembered by most people for its flight over the South Pole, on November 29, 1929. Probably even more important were its discoveries of the Edsel Ford Range, the Rockefeller Mountains, and Marie Byrd Land, plus the work of the expedition's scientists under Dr. Laurence Gould. Founding Little America on the Bay of Whales, Byrd showed conclusively how effective the airplane could be as a tool of the explorer.

The second Byrd expedition (1933-1935) concentrated on scientific work and used tractors more extensively than any previous expedition. It was on this occasion that an advance weather base was set up about 100 miles south of Little America II. Here, Admiral Byrd stayed alone from March 28 through August 10, 1934, keeping a careful record of the weather.

The type of scientific work carried on by Byrd was also performed by a British-Australian-New Zealand expedition (1929-1931) under Sir Douglas Mawson, and the British Graham Land Expedition (1934-1937) under John Rymill.

Other discoveries were made by whalers. Particularly active in this respect was the Norwegian whaling company directed by Lars Christensen. His factory ships carried airplanes, which they used both to look for whales and to fly over the coast of Antarctica.

On some of these voyages, the captains of the ships took their wives along. On February 20, 1935, Mrs. Klarius Mikkelsen accompanied her husband ashore in a small boat. So far as we know, she was the first woman to set foot on Antarctica.

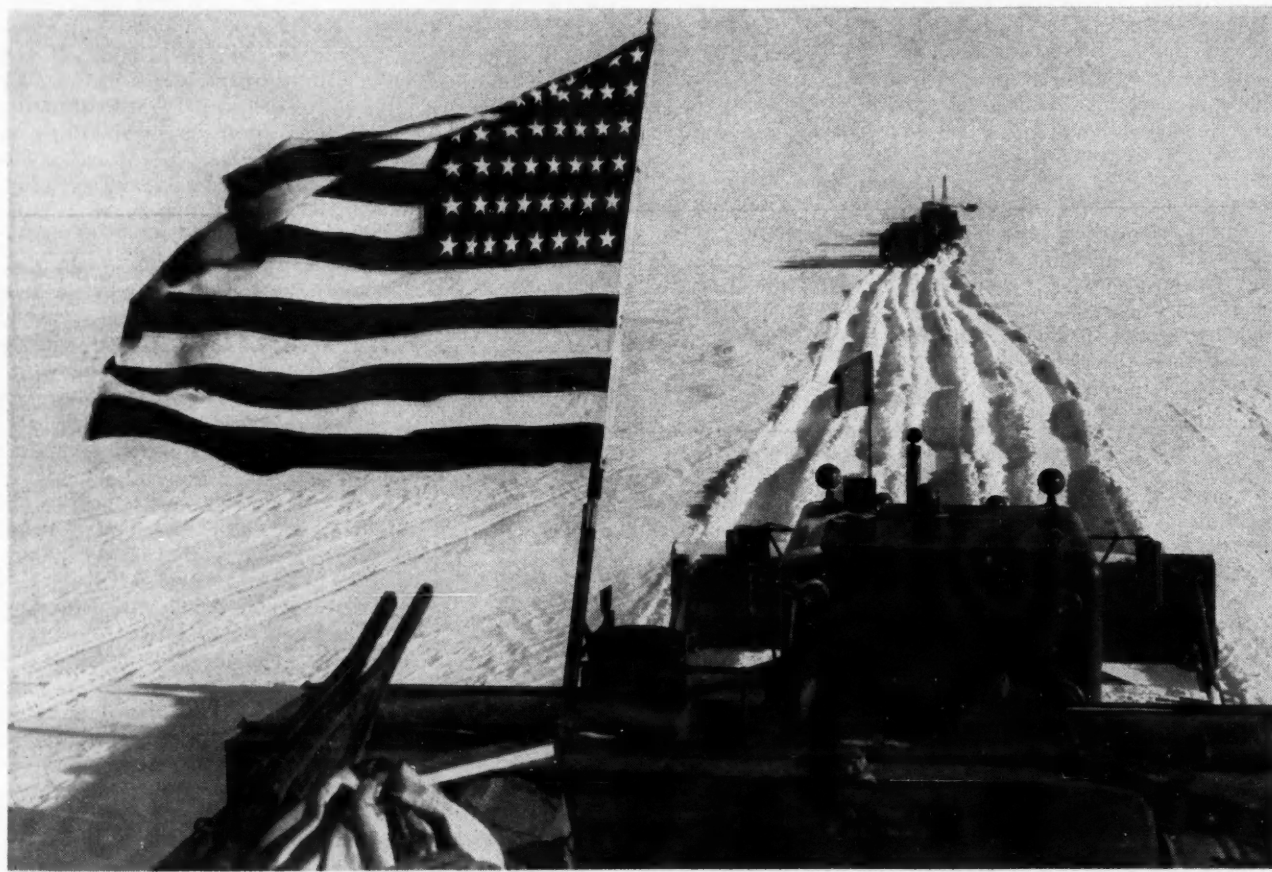
Admiral Byrd was not the only American to pioneer in Antarctica. Another was Lincoln Ellsworth. Like Byrd, he too had experience in the Arctic and had flown over the North Pole before he first went to Antarctica in 1933.

Ellsworth's great ambition was to fly across the continent. This feat he accomplished in 1935, after 2 earlier attempts had failed. He took off from Dundee Island on November 23 and came down several times en route to determine his position or wait out storms. Finally, on December 5, 1935, Ellsworth arrived 16 miles short of his goal, which was Little America. He and his pilot hiked the rest of the way.

In 1939, our government set up the United States Antarctic Service under command of Admiral Byrd. Two bases were established.

One was called West Base, at Little America III on the Bay of Whales. It was under the command of Paul Siple, who had first gone to the Arctic as a Boy Scout with Admiral Byrd in 1928.

The other station was called East Base, on Stonington Island in Marguerite Bay off the west coast of the Palmer Peninsula. It was directed by



THIS TRACTOR TRAIN is carrying materials to set up new U. S. base for research in International Geophysical Year

ened its grip on the Belgians' ship, a British expedition, led by C. E. Borchgrevink, landed at Cape Adare. This landmark is at the western entrance of the Ross Sea. There, Borchgrevink and his party built a hut. Their ship sailed away to New Zealand and returned to pick them up the following Antarctic summer.

These expeditions began what has been called the *Heroic Age* of Antarctic exploration. Before de Gerlache and Borchgrevink, no scientific explorers had spent the winter in the Antarctic. Now they could set up a base one summer and begin journeys into the interior early the following spring. During the Heroic Age, men penetrated the continent and reached the South Pole.

In 1901, German, Swedish, and British expeditions took to the field. All had their exciting times. The Germans' ship was frozen in the ice within sight of their goal and drifted with

made maps of harbors and other geographic features. In 1905-1906, the Norwegians sent the first factory-type whaler ship to the Antarctic.

Among the men on Scott's first expedition was a young British naval officer, Lieutenant Ernest H. Shackleton. As a leader, he showed great daring and imagination, combined with a practical sense of just how far to go. He took his first expedition to the Antarctic in 1907. A sledding party, which he led personally, crossed the Ross Ice Shelf, climbed the great glaciers at its head, and reached a point only 97 miles from the South Pole.

The climax to the Heroic Age came in 1911 and 1912, when the South Pole was reached. First to arrive was the great Norwegian explorer, Roald Amundsen. Leaving from the Bay of Whales in October 1911, Amundsen and 4 companions reached the vicinity of the Pole on December 14. They spent the next 3 days checking and

weakness, Scott and his men had carried the valuable specimens to the end.

While Scott and his men were struggling to their unfortunate end, an Australian expedition led by Douglas Mawson was under way. A distinguished scientist, Mawson is ranked as one of the great Antarctic explorers. On his expedition, 1911-1914, he set up camp along the George V Coast at what is one of the windiest spots in the world. He reported winds of over 200 miles per hour.

BYRD AND OTHERS

The first airplane flight in the Antarctic was made on November 26, 1928. Aboard the plane was the expedition leader, Sir Hubert Wilkins, an Australian, and the pilot, Carl B. Eielson, an American with experience in Alaska.

The man who made the most extensive use of aviation in Antarctica was

Richard Black, a veteran of the second Byrd expedition.

The plans of the U. S. Antarctic Service called for permanent bases. In 1939, however, war broke out in Europe. As the war came closer to the United States, the bases were closed.

World War II did not quite reach Antarctica, but it came close. German commerce raiders used islands near the continent as places of refuge, and these German ships captured the Norwegian whaling fleet. Such actions so alarmed the British that, in 1943, they sent a military force to the Palmer Peninsula.

AFTER WORLD WAR II

When the war was over, the British decided to keep their bases and to open others. They now have 11 bases on the Palmer Peninsula, or on islands in the area. The governments of Argentina and Chile have adopted similar programs.

The United States had been the first country to plan permanent stations. It did not, however, continue this program after World War II. Instead, it went back to expeditions that remained in Antarctica only for a limited time.

The first of these, in 1946-1947, was named *Operation Highjump*. Rear Admiral Byrd was the officer in charge, and Rear Admiral R. H. Cruzen commanded the Navy Task Force. With 13 ships and over 4,000 men, Operation Highjump ranks as one of the largest expeditions sent to Antarctica so far.

An outstanding event of the operation was the use of aircraft tenders and seaplanes to photograph large areas never before seen. Operation Highjump discovered more of Antarctica than all previous expeditions combined.

Accurate maps cannot be made from aerial pictures unless they can be related to definite points on the ground. Sufficient ground control points had not been established by Operation Highjump. The Navy, therefore, sent a second expedition to the Antarctic in 1947-1948. People called this one *Operation Windmill*, because it made extensive use of helicopters.

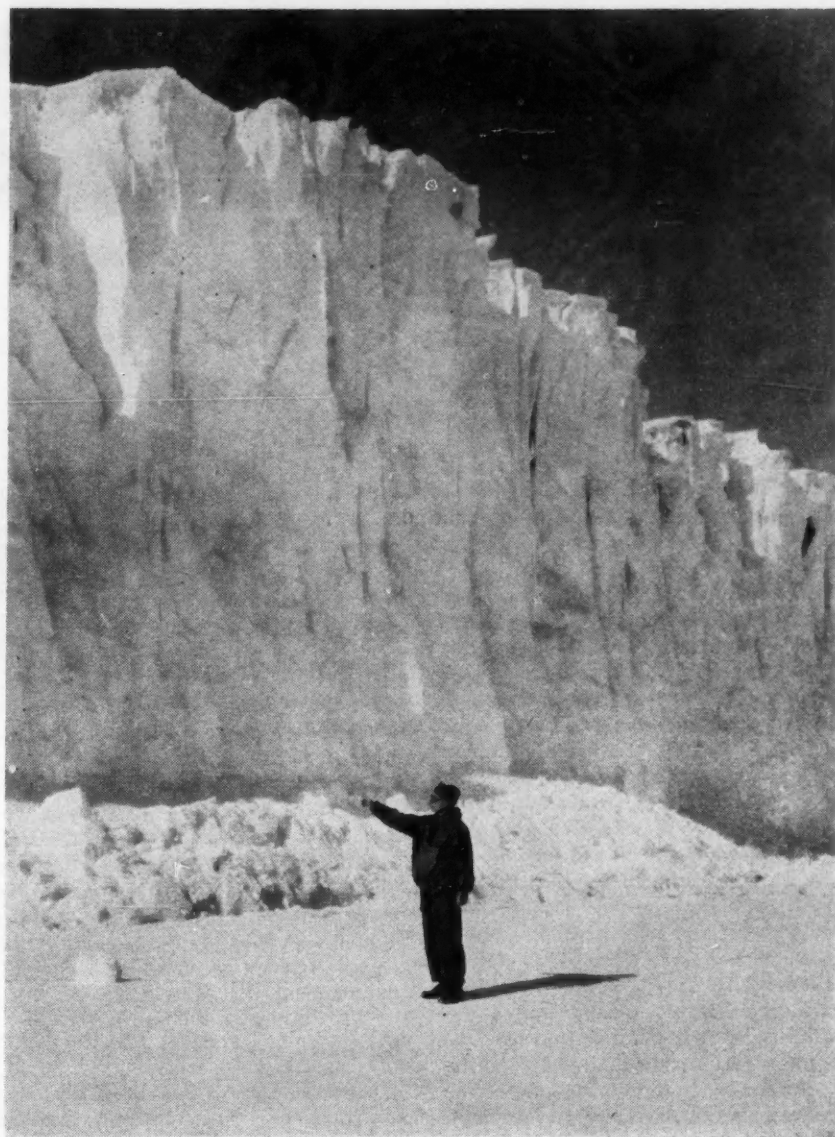
GEOPHYSICAL YEAR

In the United States, the National Academy of Sciences took charge of making scientific plans for our participation in the International Geophysical Year.

The Navy received the job of getting the scientists to the Antarctic, building their stations, and seeing that they are fed and supported. The Navy calls this assignment *Operation Deep Freeze*.

Rear Admiral George Dufek, a veteran of the United States Antarctic Service and Operation Highjump, was placed in charge of the new project. Admiral Dufek (personality sketch, page 6) has been able to call upon the Army, Air Force, Coast Guard, and Marines to help his Navy men.

Each year the Navy gives a new number to the operation. The 1955-1956 expedition was Deep Freeze I; the 1956-1957 expedition, Deep Freeze II; that of 1957-1958, Deep Freeze III.



COAST GUARDSMAN examines 150-foot-high face of glacier at McMurdo Sound

On Deep Freeze I, the Navy established 2 stations on the shore of the Ross Sea. One of these was at Hut Point on McMurdo Sound. This was the spot where Scott's 1901-1904 expedition spent 2 winters. Little America V, near Byrd's earlier bases, was set up at Kainan Bay.

Beside the building of bases, Deep Freeze I was noteworthy for the flight of 4 Navy aircraft from New Zealand to McMurdo Sound. These were the first airplanes to fly from another land mass and set down in the Antarctic. While the planes were there, they flew over 1,800,000 square miles, about 1,000,000 square miles of which had never been seen before.

At the end of Deep Freeze I, the Navy left 73 men at Little America and 93 at McMurdo Sound. It also left supplies for 2 stations to be built on the polar icecap the next year. With these materials, the men spending the winter there were able to begin the task of building the stations before supply ships could return through the ice pack.

One of the bases was to be in Marie Byrd Land and the other at the South Pole itself. Completing them, between October 1956 and March 1957, was one of the great accomplishments of Operation Deep Freeze II.

The station in Marie Byrd Land is named Byrd Station in honor of Admiral Byrd, who died in March 1957. To get the materials and supplies from Little America to Byrd Station, the Navy—with Army help—used tractors that pulled sleds.

For the South Pole base, named

the Amundsen-Scott IGY South Pole Station, airplanes carried materials and supplies. Before it was completed, Air Force planes dropped over 700 tons of material and equipment. The Navy flew in the men to put up the buildings, and later flew them out again. Finally, Navy aircraft carried in the party which would spend the winter there. Nine scientists, 9 Navy men, and a dog lived comfortably through a night 186 days long, even though the temperature went down to 102 degrees below zero.

Also, during Deep Freeze II, the Navy built 3 stations along the coast. One, at Cape Hallett, is occupied by Americans and New Zealanders together. Another is on the Knox Coast. The last of our stations is on the shore of the Weddell Sea across the continent from Little America V. It has been given the name of Ellsworth after another of our famed explorers.

LIVING IN ANTARCTICA

Today men can live fairly comfortably in the Antarctic if they stay near their bases.

One obvious problem is that almost everything needed for living in the Antarctic must be brought from outside. Except along the sea coast, where seals, penguins and other birds may be found, there are no animals one may use for food. There are no edible plants.

The doctor who uses up his medicine cannot obtain more from a nearby drugstore. Once the ships and airplanes pull out in February or March,

the best equipped expedition is on its own until new supplies arrive the next October.

Perhaps the greatest single danger to an Antarctic station is fire. It can destroy the buildings men need for shelter and burn up the supplies they need for food. For that reason, an Antarctic station usually consists of several buildings scattered about. Supplies are stored where they will not catch fire if a building burns.

At many bases, there is a refuge hut some distance from the main living quarters. It is stocked with supplies, and the men can go there if the main quarters are destroyed.

In fighting fire, the men use chemical extinguishers because no water is easily available. During the summer, there is some water from melted ice along the coast—but during the greater part of the year (at all seasons in the interior), the water of Antarctica is frozen into snow and ice. This is melted by heating processes for use at the bases.

On expeditions of the past, water was a scarce and precious item. Men used it very carefully. Even today, it is expensive because it takes great effort to get it. Men have to go outside in the cold and dark to dig snow or ice, load it on sleds, and haul it to their buildings. In early days this was done by hand. Today at United States stations, tractors are used to a large extent.

Sometimes the men cannot go out because of blizzards, and the water supply runs short. Moreover, the weather can get so cold that men cannot work outdoors for more than a few minutes without damaging their lungs. This happened at our South Pole station, but the men found a new way to get water. They made a shaft, like a mine, underneath the camp. There they dug out ice and carried it up to their snow melters.

Because it is frequently dangerous and difficult to go outside, the men make tunnels in the snow between their different buildings. Then they can walk safely from one place to another without getting lost in blinding snow or freezing.

The cold of the Antarctic is not all bad. Food placed in tunnels in the snow keeps just the way it does in a freezer. When Admiral Byrd returned to Little America on his second expedition, he used the remainder of the supplies he had left there 3 years before. In 1956, the men of Operation Deep Freeze I found that the food Captain Scott had taken to Hut Point in 1901 was still good.

Because in most places there is no moisture except in frozen form, metal does not rust and wood does not rot. In the Antarctic, men may become frostbitten or they may freeze to death, but they rarely get sick. Germs cannot live in such intense cold, and so Antarctica does not have the bacteria which cause disease.

Even though it has some advantages, the cold remains a terrible enemy. Men who go to the Antarctic must fight against it every way they can. Even in their huts, early explorers suffered from it. The terrible wind blew through every crack and drove powdered snow before it.

Today, instead of wood and tar-

(Concluded on page 8)

The Story of the Week

Talent Search

The winner of the 17th annual Science Talent Search will be announced within the next 2 weeks. The boy or girl who comes out on top will receive a \$7,500 scholarship. Runners-up will receive smaller scholarships.

The Science Talent Search is sponsored by Westinghouse Electric Company and the Science Clubs of America. Westinghouse provides funds for the scholarship plans.

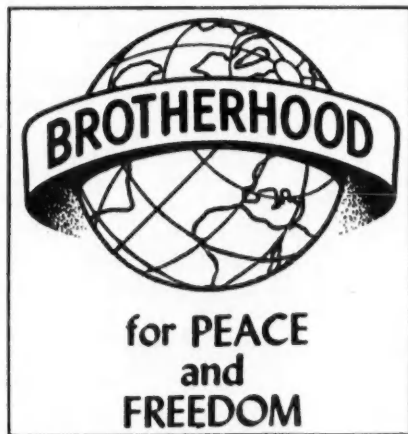
A total of 25,039 high school seniors—a record number—entered the contest this year and took a difficult science aptitude test. The field was narrowed to 4,050 young scientists who submitted their school records and reported on their scientific projects. Forty finalists—32 boys and 8 girls—were then chosen.

Later this month, the 40 finalists will begin a 5-day, all-expense-paid visit to Washington, D. C., where the winners will be announced.

Brotherhood Week

National Brotherhood Week is to be observed February 16 to 23. In schools, churches, and civic organizations, the problem of national unity will be discussed.

It is vital that here in the United States we should give thoughtful attention to this subject. America is made up of many races, nationalities, and religions. In times like these when communism is posing a serious challenge to American interests in many parts of the world, it is im-



BROTHERHOOD Week is being observed this year from February 16 to 23

perative that all our people live and work harmoniously together in an atmosphere of justice, fair play, and good will. Only by doing so can we face the future with confidence.

Elections in Argentina

Argentina will hold national elections next Sunday, February 23. Citizens of the big South American nation will vote for a new President, members of Congress, and local officials.

Some 18 parties have entered candidates in the elections. Among those who are expected to put up a strong fight for the Presidency are Dr. Ricardo Balbin and Dr. Arturo Frondizi. They represent different wings of the Radical Party.

The election is an important step in restoring normal government to Argentina. The country has been ruled by a temporary government since 1955, when Juan Perón was overthrown.

Perón had ruled as a dictator for 10 years.

The military officers who led the revolt against Perón selected General Pedro Aramburu as President until new elections could be held. Aramburu has promised to turn the government over to the newly elected officials by June 20.

Antarctic Admiral

No American knows the Antarctic and the complex problems involved in establishing bases there better than does Rear Admiral George J. Dufek. The husky, 55-year-old naval officer is commander of the Navy task force in that part of the world. Though retired, he was restored to active duty by Congress to take over the job.

Dufek grew up in Rockford, Illinois, and graduated from the U. S. Naval Academy in 1921. He has been a naval aviator, has served in submarines, and has commanded an aircraft carrier. During World War II, he helped draw up plans for the allied invasions of Sicily, Italy, and southern France.

Dufek's first contact with the Antarctic came in 1939 when he went to the South Polar region with Admiral Richard E. Byrd, famous Antarctic explorer. He took part in other expeditions in 1946-47, and in 1955 when he headed Operation Deep Freeze I.

Although he has flown hundreds of miles over Antarctica, Dufek denies that he is an explorer. "I'm an operations man," he says. "You might say I push ships and planes and men around." At the complex job of coordinating our polar activities, he is an expert.

President Eisenhower recognized Dufek's skills last summer when he appointed the retired naval officer to succeed the late Admiral Byrd as top supervisor of U. S. South Polar programs in addition to his duties as head of the Navy's Antarctic task force.

More Satellites?

The U. S. Army hopes to have several Explorer satellites traveling around the globe by the end of 1958. Two of these—1 weighing 300 pounds and another weighing 700—would carry equipment that can take pictures and send them to earth by TV.

The Air Force is planning similar "moons," with weights ranging up to a ton. Big military missiles—Thor, Atlas, or Titan—would be used for the launchings. Air Force officials believe their Thor, with some changes and additions, could put a 1,000-pound satellite into orbit within the next 4 or 5 months.

Plans concerning the large, camera-carrying satellites are still indefinite. For the time being, Defense Secretary Neil McElroy has the job of choosing specific projects. In this, he is aided by Roy Johnson—formerly of General Electric—who heads the Defense Department's new Advance Research Projects Agency.

Meanwhile, congressional and Administration leaders are studying the question of whether we should eventually set up a non-military agency to take charge of space exploration.

While the talk of larger and larger satellites continues, the Army is going ahead with preparations to launch another "moon" similar to Explorer I.



REAR ADMIRAL George Dufek supervises U. S. programs in Antarctica

Also the Navy, despite all its trouble with the complicated Vanguard rocket, hopes to send up a 21-pound device.

Reporters—interviewing Army rocket expert Wernher von Braun recently—mentioned the numerous U. S. and Soviet earth satellites that are being planned, and asked whether some of them might possibly collide. Von Braun sees hardly any danger of this. "There's an awful lot of space," he comments.

Tunisia and France

A wave of anger against France has swept across North Africa since a number of French warplanes attacked a small village in Tunisia about a week ago. The anti-French feeling in North Africa is so strong that France's allies, including the United States, are also losing influence in that part of the globe.

The trouble broke out when French planes bombed and strafed Sakiet Sidi-Youssef, a village near the Tunisian-Algerian border. France claims the town was used by Algerian rebels who have long waged a war of independence against Paris. The French also say they struck only at military targets in Sakiet Sidi-Youssef.

Tunisia denies that its village was used as a base by Algerian rebels. The North African land insists, too, that the air strike was made largely against Tunisian civilians, a number of whom were killed or wounded by the attack.

The United States and other countries friendly to both France and Tunisia were deeply shocked by the French action in North Africa. It is widely feared that the incident will seriously weaken our ties with North Africa. Until now Tunisia's President Habib Bourguiba has been a strong friend of the United States and other western nations.

Meanwhile, Tunisia says it will take its charges against France to the United Nations for further action.

Sullivan Award

Next Sunday—February 23—Bobby Morrow of San Benito, Texas, will receive the Sullivan Trophy. The award goes each year to the nation's top amateur athlete. Morrow was chosen for the honor because of his outstanding record as a track man.

The 22-year-old Texan is the world's fastest runner. In the last Olympic Games he won the 100-meter and 200-meter races and was anchor man (the last runner for his team) in a four-

man relay event in which the U. S. quartet set a new world record. Morrow was the only person on the U. S. Olympic team to win 3 gold medals.

After finishing his course at Abilene Christian College in Abilene, Texas, this year, Bobby expects to go into the Army. He will get out just in time for the 1960 Olympic Games in Rome.

Merit Scholarships

High school students who are now starting the second semester of their junior year—or the first semester of their senior year—are eligible to compete for college scholarships in an examination given next April 29 by the National Merit Scholarship Corporation.

Many large business concerns make awards to help pay the college expenses of qualified young people. The National Merit Scholarship Corporation, a nonprofit group, aids them in selecting talented students for this purpose. On the basis of a competition that is already under way, more than 1,000 Merit Scholarships will go to students who graduate from high school this year.

Winners in the nation-wide contest select their own colleges. They receive payments according to their individual needs. Up to the present time, the average Merit Scholar has received about \$650 annually.

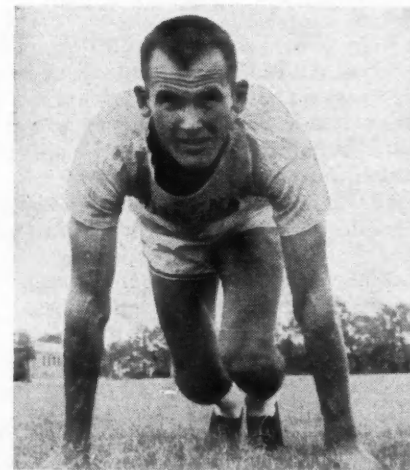
An official announcement says that the forthcoming competition will extend "to any public, private, or parochial school in the 48 states, the District of Columbia, Alaska, the Canal Zone, Hawaii, Puerto Rico, or the Virgin Islands." Two students in each school may take the test free of charge. Others may do so at a fee of \$1 each. All who want to enter the competition must register with their principals by March 20.

For further information, write to: National Merit Scholarship Corporation, 1580 Sherman Avenue, Evanston, Illinois.

Know Your Congress

What is the main work of congressional committees?

One of their leading duties is to prepare legislative proposals. The committees also conduct investigations, keep tabs on government agencies which carry out federal laws, and perform a number of other tasks. One way in which the congressional groups



BOBBY MORROW of Texas is the winner of the Sullivan Award for 1957



HAWAII'S GOVERNOR William Quinn (fifth from left) and members of Statehood Commission chat with students and faculty members at Roosevelt High School, Honolulu. Some 550 seniors are studying issue of statehood for Hawaii.

collect information needed for their work is to hold hearings, many of which are open to the public.

What special powers does the House Rules Committee have?

This committee exercises a good deal of control over legislation by deciding what measures will be permitted on the floor of the House for consideration. It also has power to make certain rules, including the length of time a measure can be debated on the floor.

Benelux Countries

Belgium, the Netherlands, and Luxembourg are now working almost as a single nation in matters of trade. Their leaders recently climaxed a long period of cooperation in this area by setting up the Benelux Economic Union. ("Benelux" is a word formed from the first letters of the name of each country.)

Under the Union, goods and persons will move freely among the 3 lands without restrictions. Tariffs have already been abolished. The agreement looks forward to the time when financial and economic policies of the Benelux lands will be entirely coordinated.

Since World War II, Belgium, the Netherlands, and Luxembourg have gone further than any other group of countries in merging their economies. By working together, these 3 small European nations have been able to challenge the big trading countries of the world.

Today the Benelux lands—viewed as a combined group—rank fourth among the world's trading nations. In volume of world trade, they are surpassed only by the United States, Great Britain, and West Germany.

Atom School

Just recently, 54 scientists and engineers from 25 foreign countries arrived in the United States to receive advanced training on nuclear energy. They are studying the ways in which we use atomic reactors, or "furnaces," for scientific research and for generating electric power.

The foreign students, along with several Americans, are now taking special courses at North Carolina State College and Pennsylvania State University. Later they will visit numerous U. S. atomic plants and laboratories, and finally they are to spend 4 months at the Atomic Energy Commission's Argonne National Laboratory near Chicago.

Six previous groups of scientists, engineers, and technicians have been brought to America for similar courses of training. The newcomers boost the total number of individuals to 326—representing 43 foreign lands. Several members of the latest group are from the free nations of Europe, and some represent Latin America, but nearly half are from Asia.

This and That

CARE. Reports from all corners of the world indicate that American books are doing a good job of combating Soviet lies about us. Special kits of 99 books are sent overseas by CARE, a nonprofit relief agency. The reading material is selected by the U. S. Information Agency as representative of American life and culture.

You can cooperate in this worthwhile cause by making a contribution to CARE. Though it costs \$30 to send the 99-book kit abroad, contributions of any amount are welcomed by CARE. Additional information may be obtained from your local CARE office, or from the group's national headquarters at 660 First Avenue, New York 16, N. Y.

Chile's President Carlos Ibañez is

making plans for an early visit to the United States for talks with President Eisenhower and a tour of several American cities. A visit planned by the Chilean leader last December had to be called off because President Eisenhower became ill a short time before Ibañez was scheduled to come here.

Languages. Recent figures show that more than 10,000,000 people in Russia can read and speak English. Another 5,000,000 are studying the language. It is estimated that about 100,000 people in the United States can speak Russian, and only some 8,000 are now studying the language.

College entrance requirements may become stiffer in the years to come. A study group of the Association of American Colleges is calling for the following minimum high school preparation for student applicants: 4 years of English, 4 years of mathematics, 4 years of a foreign language, and 2 years of a laboratory science.

Next Week's Articles

Unless unforeseen developments arise, the main articles next week will deal with (1) U. S. transportation industries and their problems, and (2) Africa.

THE LIGHTER SIDE

An antique collector has left over 400 clocks in his will. Someone is going to have a busy time winding up that estate.

★

He: No woman ever takes another woman's advice about dresses.
She: Naturally. You don't ask the enemy how to win the war.



"I know you have a fear of air travel, Dawson, . . . but will you kindly stop saying to ticket buyers, 'IF you arrive at your destination!'"

"Tell me what you eat," said a soda counter employe in a loud voice, "and I'll tell you what you are."
"Cancel my order for shrimp salad!" piped up a little man a few stools down.

★

"How far is it to the next filling station?" the driver asked a farmer.
"Nigh on to 2 miles as the crow flies."
"Well, how far is it if the crow has to walk and carry a flat tire?"

★

"Ha, ha," laughed the recruit. "You can't fool me. I know they have potato-peeling machines in the Army."
"Yes," said the sergeant, "and you're the latest model."

★

Husband (at movie): Why do you weep and sniffle over imaginary woes of people you don't know?
Wife: For the same reason you yell and shriek when a man you don't know slides into second base.

★

Said the opera star: I insured my voice for \$250,000.
Said her rival: My dear, what did you do with the money?

News Quiz

The Antarctic

1. How have Sir Edmund Hillary and Vivian Fuchs entered into the exploration picture in Antarctica this year?
2. Who was the first explorer to travel overland to the South Pole?
3. The Arctic and Antarctica—both cold—differ sharply in what respects?
4. Tell something about the physical makeup of the southern continent.
5. What is IGY? How do present Antarctic studies fit into it?
6. What may scientists learn from studies of weather and melting ice in the southland?
7. Name a few of the minerals searchers have found so far.
8. What is the aurora? How is it caused?
9. What few things grow on Antarctica?
10. Tell about whales of the icy continent and why they are hunted.
11. Seals have a place in the history of Antarctic exploration. Why?
12. Describe the penguins down south.
13. Captain James Cook of Britain, Captains Nathaniel Palmer and John Davis of Connecticut, and Lieutenant Charles Wilkes of the U. S. Navy all are listed in histories of the Antarctic for the 1770-1840 period. Why?
14. What is the so-called Heroic Age and what were some of the events during it?
15. What did each of these 3 men contribute to Antarctic exploration: Sir Hubert Wilkins, Admiral Richard Byrd, and Lincoln Ellsworth?

Discussion

1. Do you feel that the United States should claim definite possession of certain Antarctic areas which it has explored? Why or why not?
2. Do you believe there will ever be permanent settlements, including homes, schools, stores, etc., in the Antarctic? Give reasons for your answer.

Miscellaneous

1. Briefly discuss the purpose of Brotherhood Week.
2. What is to occur in Argentina on February 23, and why is the event especially important to that nation?
3. Mention a few highlights in the career of Admiral George Dufek.
4. Describe some of the earth satellites that our military forces want to launch within the next year or so. For the time being, who has the task of deciding what space projects will be carried out?
5. What incident in Tunisia about a week ago brought on a wave of anti-western feeling in that North African land?
6. Name the "Benelux countries" and briefly tell about their cooperation in the field of trade.
7. A group of more than 50 foreign scientists and engineers recently arrived in the United States for advanced training. What are they studying?

Last Week's Puzzle

HORIZONTAL: Bundestag. VERTICAL:
1. Albany; 2. purse; 3. fusing; 4. freedom; 5. Premier; 6. Syria; 7. state; 8. Caracas; 9. King John.

Pronunciations

Adèle—ăd'ul-ē
Adrien de Gerlache—ă-drē-ăn duh zhēr-lăsh
Arturo Frondizi—ăr-tōō'rō frōn-dē-sī
Borchgrevink—bōrk'grā-vēngk
Carlos Ibañez—kăr'lōs ē-băn'yās
Dumont d'Urville—dōō-mōnt dūr-vēl
Fuchs—fewks
Habib Bourguiba—hă'bēb bōōr'gē-bă
Juan Perón—hwăn pē-rawn'
Pedro Aramburu—pă'drō ā'rām-bōōr'-you
Ricardo Balbín—rī-kăr'dō bāl-bēn'
Roald Amundsen—rō'ăl ā'mōōn-sēn



HELICOPTER prepares to take off from deck of ship. This type of aircraft has proven highly useful in Antarctic. Vessel in background is supply ship.



IT'S A LONG WAY HOME, thinks this Navy man, as he examines "highway" marker erected in Antarctica by certain members of Operation Deep Freeze

Antarctic Today

(Concluded from page 5)

paper, expeditions use panels for the sides and roofs of buildings. These panels consist of a layer of plywood which faces outside, and a layer of aluminum which faces inside. Between the 2 layers is an insulating material which helps to keep the cold out.

So long as expeditions seek to explore and study Antarctica, men cannot always stay at their stations. They must go out on the trail, carrying on sleds everything they need—tents, sleeping bags, food, clothing, fuel, and scientific instruments.

In the days before tractors, this was very difficult to do. Many early explorers, like Scott, hitched themselves to their sleds and trudged slowly and painfully over the Antarctic landscape. Others tried to use Siberian ponies, but these little beasts were not well adapted to the Antarctic.

Much more successful were the sled dogs, or Huskies, like those used by Eskimos and others in the North. Amundsen's great achievement in reaching the South Pole in 1911 was based on his use of Huskies. Although expeditions now generally have tractors and airplanes to get about, some of them also have sled dogs. During Operation Deep Freeze II, a team of Huskies at the South Pole proved most useful when the tractor broke down.

On his 1901-1904 expedition, Captain Scott took an observation balloon to the Antarctic. Letting the balloon up on a cable from his ship, Captain Scott used it to make observations of the Ross Ice Shelf. It was not until Sir Hubert Wilkins' 1928 flight that the airplane was introduced to the area.

Early in 1929, Admiral Byrd began using airplanes and aerial cameras extensively in exploration. It seems probable that within a few years all the remaining unknown parts of the continent will have been seen from the air.

Big airplanes such as those required

to carry supplies to the South Pole presented a new problem to the Antarctic. They weighed too much to use skis and had to land on wheels. In December 1955, the Navy landed wheeled planes on the bay ice at McMurdo Sound.

For Operation Deep Freeze II, when the still larger Air Force planes were used, the snow was cleared from the ice and a runway laid out. This worked successfully, except that the runway began to melt and develop holes filled with water as the weather grew warmer.

In this emergency, the Army sent Dr. Andrew Assur, a civilian expert in the study of ice behavior, to the trouble spot. He filled the holes with a mixture of ice chips, snow, and water that froze solid. This "ice concrete" saved the day and the operation went on again.

Many important scientific studies can be made only on the surface of the continent. In carrying out such studies, men must travel on foot, by dog team, or by tractor train—not by air.

A tractor pulls behind it one or more sleds on which supplies and equipment are loaded. The tractor trains that carried the building supplies, food, and equipment to Byrd Station in 1956 and 1957 used 35-ton tractors. These pulled sleds that, when loaded, weighed 20 tons.

When the men ate or slept, they used wannigans. These are actually huts built on sleds that can be pulled along behind a tractor. They contain bunks, stoves, radio equipment, and other things to make the men comfortable.

Nevertheless, Antarctic travel remains difficult and dangerous. Great blizzards blow up quickly and last for

days, bringing the mightiest tractor to a halt. Then there is always the danger that a tractor will fall into crevasses, or cracks in the ice. These may be from a few inches to many feet wide, and over 100 feet deep. They would not be so bad if the traveler could see them, but often he cannot because they may have a light snow-covering over them.

On Operation Deep Freeze I, a United States Navy tractor slipped into a crevasse and carried its driver to his death. On a later trip, Army men formed part of an advance party that went ahead of the heavy tractor trains to find a safe route. These men had devices which detected crevasses electrically. Where the ice cracks were few in number, they steered around them, but finally the party came to a place where the crevasses were everywhere. It took 2 weeks to pack all these with snow before the main tractor trains could travel over them on their way to Byrd Station. After the work was completed, the journey was made without any difficulty or accidents.

You may wonder what kind of clothing men wear outdoors in the Antarctic. Is it very heavy, for example? Actually on a still day, when the sun is shining, men working outside become quite warm. Frequently, they strip down to their shirt sleeves. Hardy souls have even been known to take their shirts off.

Ordinarily, however, Antarctic explorers dress warmly. The principle of cold weather clothing is not so much the bulk of the individual pieces as it is the number of layers. Air is trapped between and serves as insulation. Another important feature of Antarctic clothing is that the outer layers should be wind-proof.

With present-day clothing and equipment, men can live in the Antarctic and work on the trail at very low temperatures. The Antarctic, though, remains a dangerous and unpredictable land. Men, if they are going to survive there, must never relax their guard. A moment of carelessness can easily cost a life.



WEATHER STATIONS, like this one, furnish valuable scientific information for the men now engaged in research in snow-covered Antarctica